

REMARKS

Applicant respectfully requests reconsideration of this application. Claims 16, 18-24, 26-36, and 38-42 are pending. All pending claims have been cancelled. 43-61 claims have added. Therefore, claims 43-61 are now presented for examination.

Objection to Drawings

The Examiner has indicated that Figure 2 should be designated by a legend such as "Prior Art".

Formal drawings are submitted concurrently herewith. Included in Figure 2 is the legend "Prior Art". Applicant respectfully requests approval of such formal documents.

Claim Rejections under 35 U.S.C. § 112

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claims the subject matter which applicant regards as in the invention.

Claim 18 has been cancelled, and it is submitted that the rejection does not apply to the newly added claims.

Claim Rejection under 35 U.S.C. §102

Borg et al.

The Examiner rejected claim 16 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,476,864 of Borg et al. ("Borg").

Claim 16 has been cancelled. Claim 43 reads as follows:

43. An apparatus comprising:
an analog photocell;

a sample and hold amplifier, a first input to the sample and hold amplifier being an output from the analog photocell, a second input to the sample and hold amplifier being a reference voltage, the sample and hold amplifier producing an output that is a scaled version of the output of the analog photocell, the scaling of the output being controlled by the reference voltage; and

an analog to digital converter, the analog to digital converter converting the output of the sample and hold amplifier to a digital value, the scaled version of the output of the analog photocell being chosen to match a dynamic range of the analog photocell with a dynamic range of the analog to digital converter and being based, at least in part, on ambient light conditions.

Among the elements of claim 43 is “the sample and hold amplifier producing an output that is a scaled version of the output of the analog photocell, the scaling of the output being controlled by the reference voltage”, with “the scaled version of the output of the analog photocell being chosen to match a dynamic range of the analog photocell with a dynamic range of the analog to digital converter and being based, at least in part, on ambient light conditions.” It is respectfully submitted that Borg does not provide for these elements.

Claim Rejection under 35 U.S.C. §102

Tsay et al.

The Examiner rejected claims 16 and 24 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,529,237 of Tsay et al. (“Tsay”).

Claims 16 and 24 have been cancelled. It is respectfully submitted that Tsay also does not provide for the elements of claim 43 provided above.

The Office Action indicates that “[f]urther, since the photocell of Tsay et al. detects an image scene, light from ambient sources or ambient light conditions is exhibited in the detected signal. The S/H amplifier scales the detected signal, thus, the output of the S/H amplifier is based on ambient light conditions.” It is submitted that this statement is not accurate, and Tsay does provide the elements of the claims.

The abstract of Tsay indicates that “[t]he output scale is adjusted or mapped by limiting the output between a negative and a positive reference input.” However, this statement is simply indicating that limitations on the output are present, not that the output is scaled. This fact is shown in Figure 2. Figure 2 illustrates an operational amplifier 68 with a positive output V_p on node 94 and a negative output V_m on node 106. There are switches 90 and 96 between the positive output and a voltage V_{REFM} and switches 102 and 98 between the negative output and a voltage V_{REFP} . Tsay indicates that “[t]he voltage V_{REFM} and V_{REFP} indicate the negative and positive reference voltages at the negative and positive limits of the output. The difference between these two is the maximum voltage swing on the operational amplifier 68.” (Tsay, col. 3, lines 53-57) Therefore, what Tsay actually does is limit the highest (most positive) and lowest (most negative) output voltage using certain reference voltages. Tsay thus does not chose a scaled output to meet any ambient light conditions, but instead simply sets limits for the output.

It submitted that Tsay does not provide for a scaled output, with the scaling being controlled by a reference voltage. Tsay further does not provide for a scaled version of the output of the analog photocell being chosen to match a dynamic range of the analog

photocell with a dynamic range of the analog to digital converter. Finally, even if Tsay were interpreted to provide for scaling of an output, Tsay simply provides for maximum and minimum output levels and does not utilize any ambient light conditions.

Claim Rejection under 35 U.S.C. §103

Tsay et al in view of Kanda

The Examiner rejected claims 18, 19, 26 and 27 under 35 U.S.C. 103(a) as being unpatentable over Tsay in view of U.S. Patent No. 5,929,905 of Kanda et al. ("Kanda").

The rejected claims have been cancelled. The issues regarding Tsay are described above. In addition, it is submitted that Kanda does not teach or suggest the claim elements that Tsay fails to teach or suggest.

Kanda generally provides a system that allows for operation with multiple clock operation in an imaging device, in particular a charge-coupled device (CCD). Kanda indicates that "[t]he present invention therefore proposes an imaging apparatus which has solved the problems of related art explained above and can use, even when CCD is driven with the clock different from that used in the final output stage, the signal processing system of the final output stage in common by adding a clock exchange function."

(Kanda, col. 1, lines 52-57)

In regard to this function, Figure 1 of Kanda illustrates a system that includes an AGC (automatic gain control) circuit. Kanda indicates that:

In FIG. 1, an imaging signal outputted from the CCD 11 used as the imaging device is subjected to a sampling hold process and a gain control for matching with a dynamic range of a digital circuit in the subsequent stage in a sampling and AGC circuit 12. Thereafter, such signal is converted to the digital signal of the predetermined number of bits. The digital imaging signal is supplied to a pre-processing circuit 14 to

obtain, in this example, a luminance signal Y and a color difference signal between the signals R and B. While the luminance signal Y is obtained as a sequence signal, the color difference signal is obtained as a point sequence signal. These signals are generally called as a pre-processing signal.

(Kanda, col. 3. lines 15-27) It is respectfully submitted that the system illustrated and described in Kanda is very different than the elements of the claims presented here. In addition to other differences, Kanda does not match a dynamic range using scaling controlled by a reference voltage, and the scaling is not based at least in part on ambient light conditions. Figure 1 illustrates a box with the label "AGC" 12. However, there is no explanation regarding this device in Kanda other than the above-quoted section. There is no indication that the circuit includes a reference voltage that controls the scale of any signal. The only input to the circuit that is illustrated is a clock signal CKL. Further, there is no teaching or suggestion that a scaled version of an output is chosen to match a dynamic range of the analog photocell with a dynamic range of the analog to digital converter and or is based, at least in part, on ambient light conditions

Another gain adjustment function is shown in Figure 3 of Kanda, which shows an example of a clock exchange circuit. In this illustration, two gain adjusting circuits 40 and 50 are illustrated. However, an examination of the figure indicates that the gain adjusting circuits are adjusted based on the relationship of the clock signal CKL and the clock signal CKH. A choice between the three gain amplifiers for gain adjusting circuits 50 and 44 is made by switches 54 and 44 respectively. Switches 54 and 44 are synchronously operated by a pulse generating circuit 60. "Since this generating circuit 60 determines the switching sequence depending on the clock CKL and CKH, the initial value (2-bit data) of the loading data to be loaded to a 2-bit counter 63 is selected in the

loading data selecting section 62 to which the clocks CKL and CKH are supplied and the selected value is loaded to the counter 63. The timing for the loading is the loading pulse LD to be supplied to a terminal 64 (FIG. 4B).” (Kanda, col. 4, lines 50-57) Kanda thus illustrates a circuit that modifies gain based on the relationship between the different clocks utilized.

Therefore, Kanda illustrates a automatic gain control circuit with no indication of operation, and illustrates a clock exchange circuit that modifies gain based on clocking. It is respectfully submitted that Kanda does not teach or suggest the elements of claim 43.

Claim Rejection under 35 U.S.C. §103

Tsay et al in view of Gordon

The Examiner rejected claims 30-23, 28-36 and 38-42 under 35 U.S.C. 103(a) as being unpatentable over Tsay in view of U.S. Patent No. 3,833,903 of Gordon et al. (“Gordon”).

The rejected claims have been cancelled. Tsay has been discussed above, and it is respectfully submitted that Gordon does not teach or suggest the claims elements that are missing from Tsay. Gordon discusses a voltage-controlled oscillator for use with analog to digital converters, and is not relevant to the claim elements discussed herein.

Other Claims

It is submitted that the arguments presented above with regard to Claim 43 also apply to independent claims 48, 53, and 58. The remaining claims are dependent claims and are allowable because they are dependent on the allowable base claims.

Conclusion

Applicant respectfully submits that the rejections have been overcome by the Amendment and Remark, and that the claims are in condition for allowance. Accordingly, Applicant respectfully requests the objections and rejections be withdrawn and the claims be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

The Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 09-0457 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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